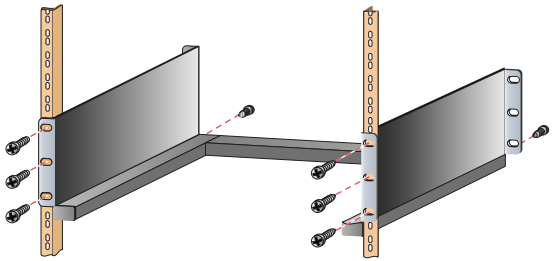
Quick Reference Catalyst 8510 and LightStream 1010 Hardware Information

Cisco Systems

Installing and Grounding the Chassis

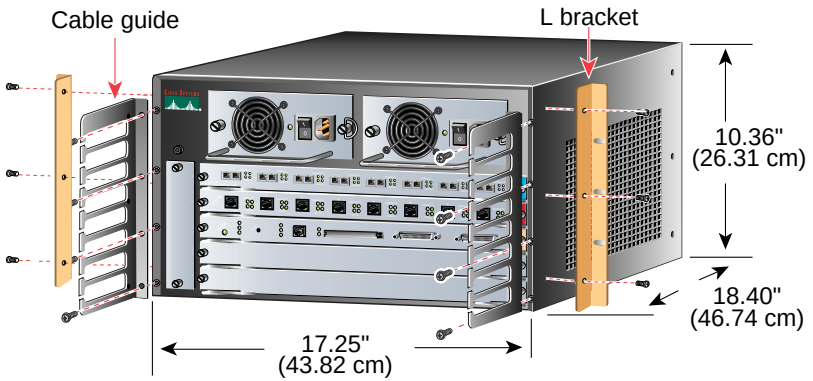
WARNING: Before you install, operate, or service the system, read the Site Preparation and Safety Guide. This guide contains important safety information you should know before working with the system.

Installing the Rack



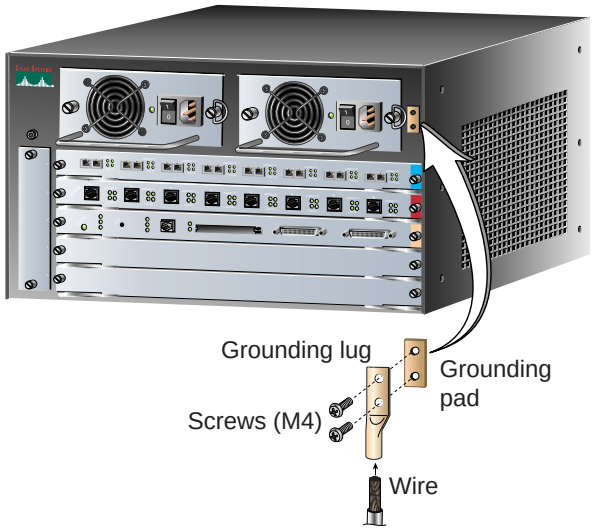
WARNING: Three people are required to lift the chassis. To prevent damage to the chassis and components, never attempt to lift the chassis by the handles on the power supplies or on the interface modules, or by the plastic panels on the front of the chassis.

Attaching the Brackets and Guides



Installing the Chassis in a Rack

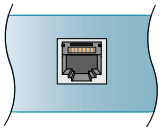
Grounding the System



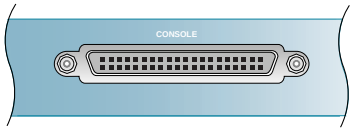
Ports and Cabling

ROUTE PROCESSOR PORTS

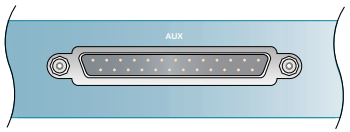
Ethernet port



Console port

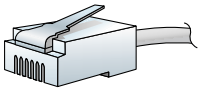


Auxiliary port

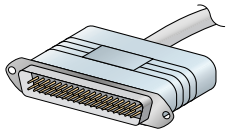


CABLE CONNECTORS

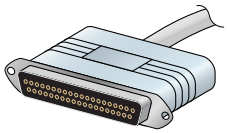
RJ-45



EIA/TIA-232 (male DB-25)

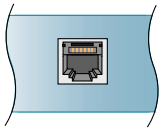


EIA/TIA-232 (female DB-25)

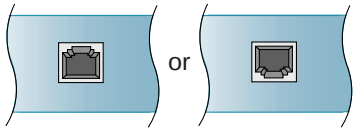


PORT ADAPTER/ INTERFACE MODULE PORTS

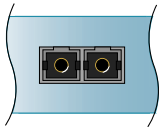
10/100BASE-T, T1/E1, CES, CE1 Frame Relay



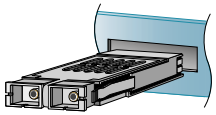
100BASE-FX



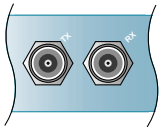
155 Mbps, 622 Mbps



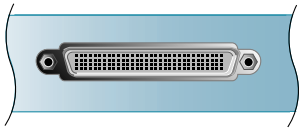
Gigabit Ethernet



E1, CES, DS3/E3, CDS3

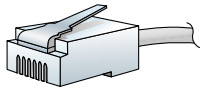


25 Mbps

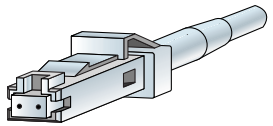


CABLE CONNECTORS

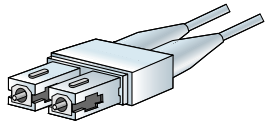
RJ-45, RJ-48c



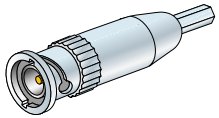
MT-RJ fiber



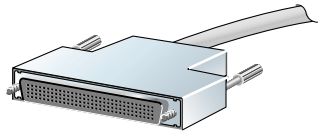
SC-type fiber



BNC

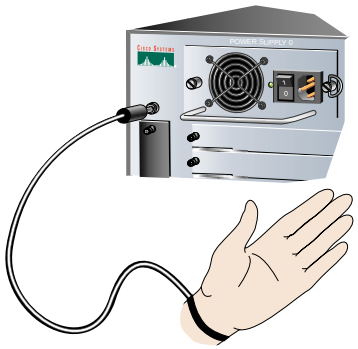


96-pin Molex



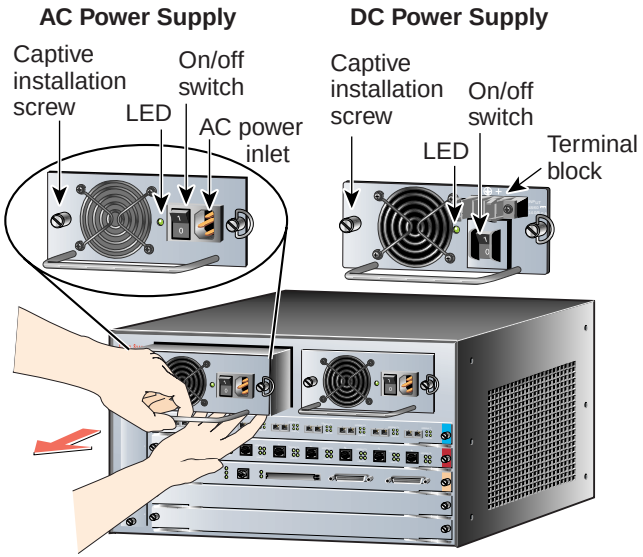
Replacing Components

Securing an ESD Strap



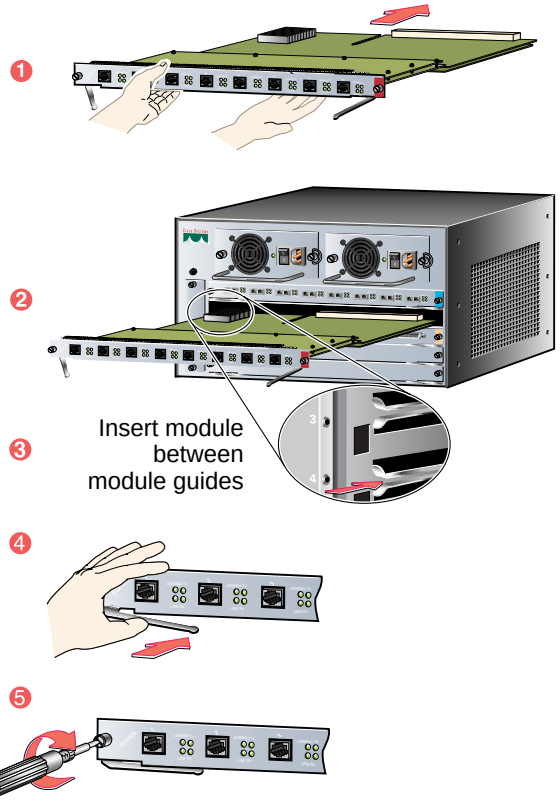
WARNING: Always connect the ESD wrist strap to the ESD strap connection at the top left side of the chassis before removing any component.

Replacing a Power Supply

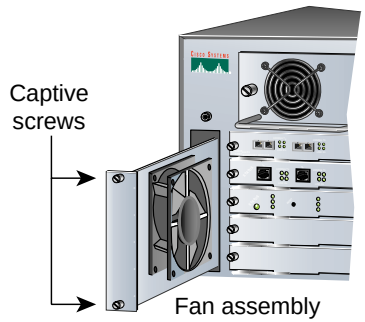


WARNING: Always turn off the power supply unit before removing it. While holding the AC or DC power supply handle with one hand, place your other hand underneath to support the bottom of the supply.

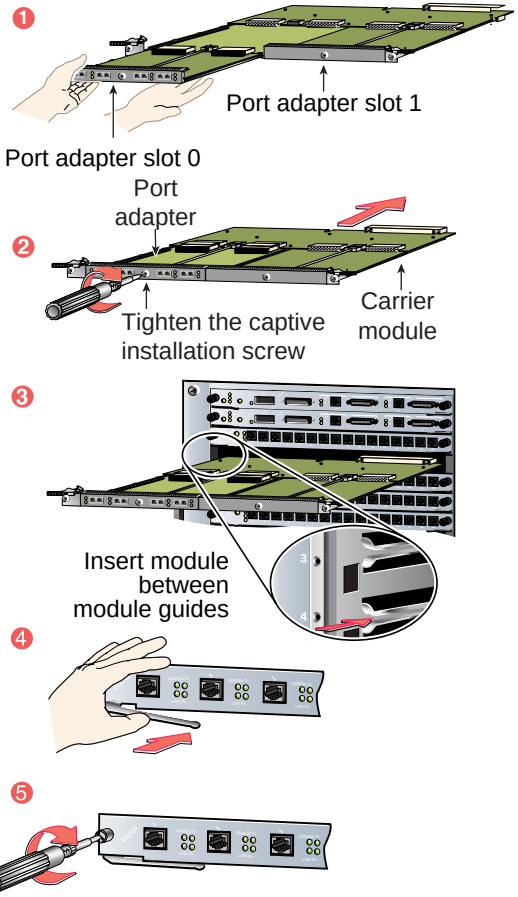
Installing an Interface Module or Carrier Module



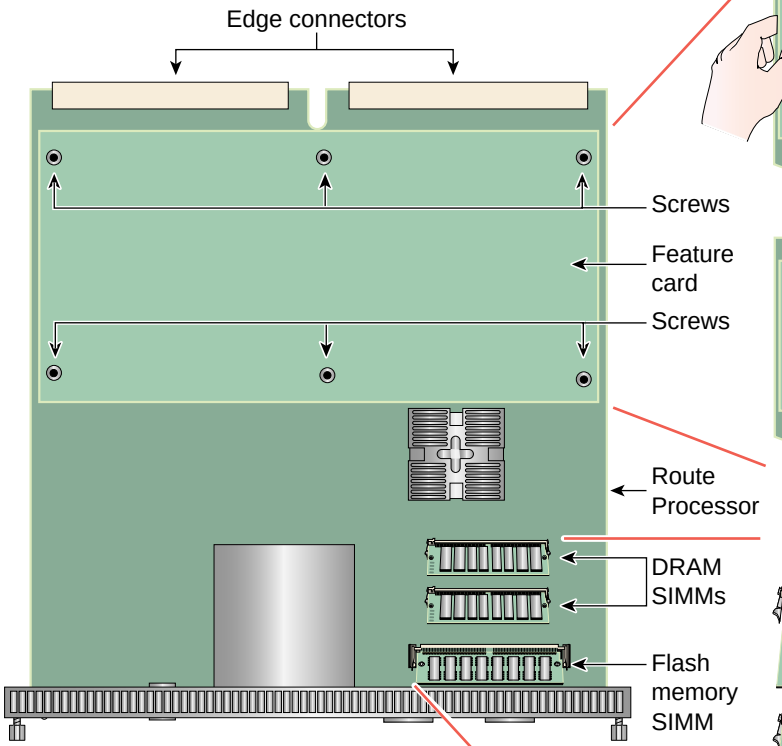
Installing a Fan



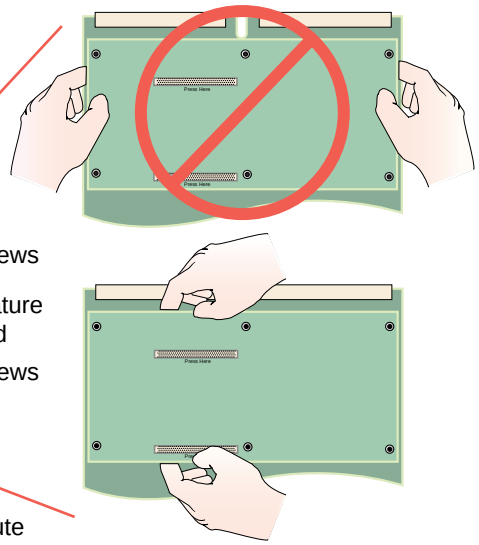
Installing a Port Adapter



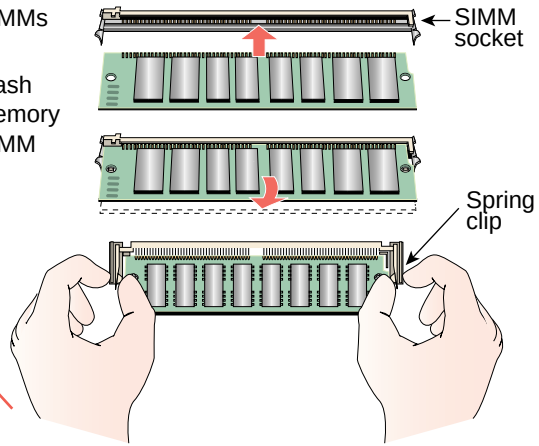
Top View of the Route Processor



Replacing the Feature Card

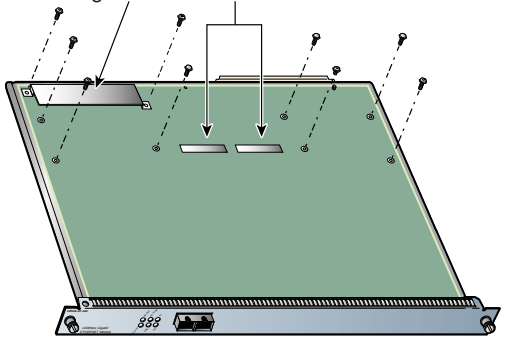


Replacing a SIMM



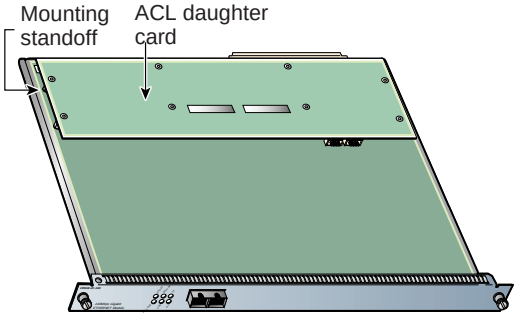
Replacing an ACL Daughter Card

A



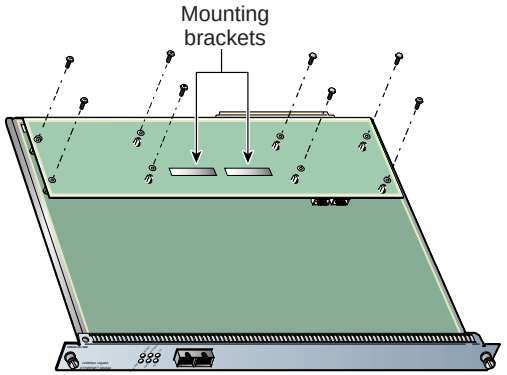
Remove the screws and replace them with the mounting standoffs

B



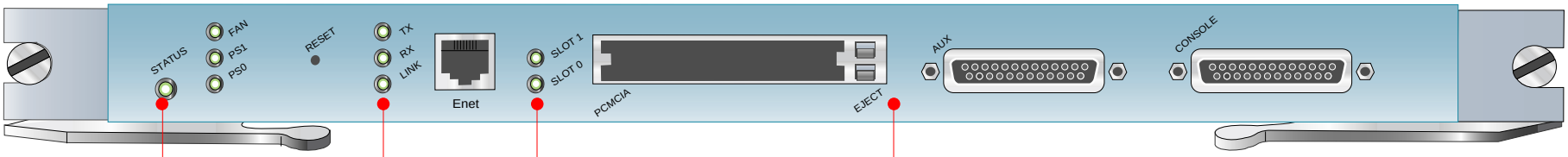
Align and position correctly over the mounting standoffs

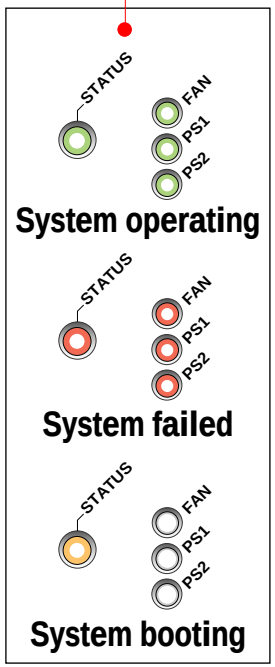
C

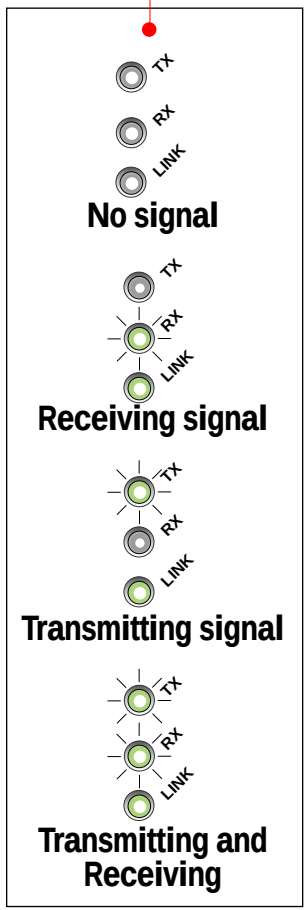


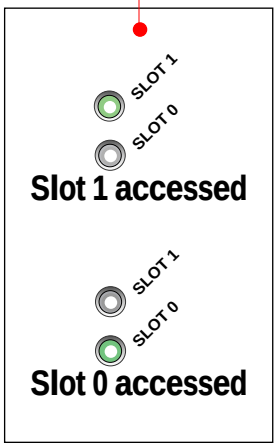
Install and secure the ACL daughter card to the interface module standoffs

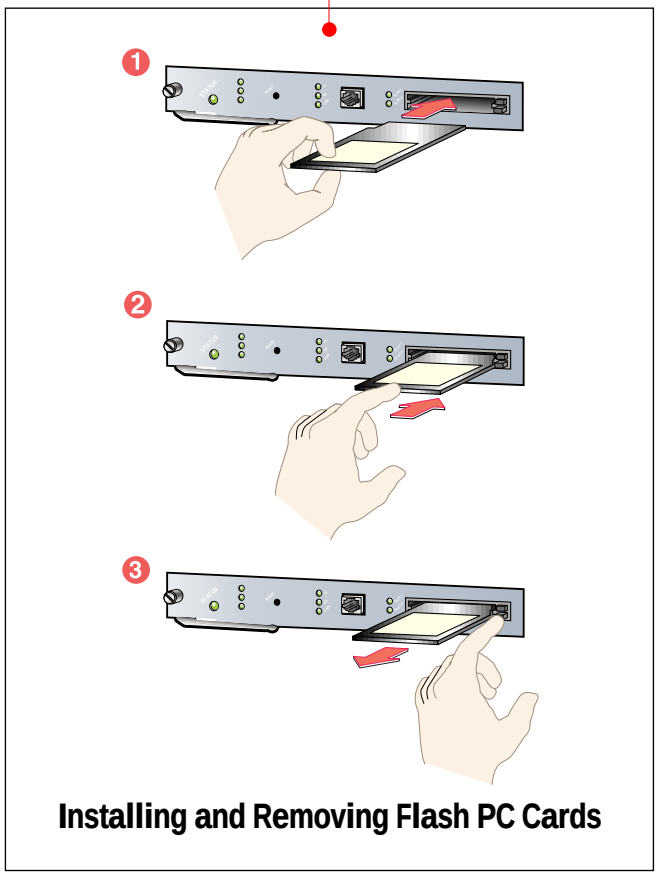
Route Processor LEDs





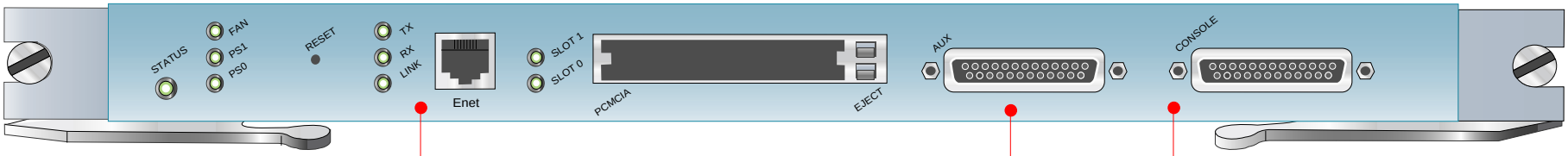






: Flashing LED

Route Processor Port Pinouts



Ethernet Port (RJ-45) Pinouts

Pin	Signal	Direction	Description
1	TX+	—>	Transmit data +
2	TX–	—>	Transmit data –
3	RX+	<—	Receive data +
6	RX–	<—	Receive data –

Auxiliary Port (DB-25) Pinouts

Pin	Signal	Direction	Description
1	GND	—	Shield ground
2	TXD	—>	Transmit data
3	RXD	<—	Receive data
4	RTS	—>	Request to send (used for hardware flow control)
5	CTS	<—	Clear to send (used for hardware flow control)
6	DSR	<—	Data set ready
7	Signal ground	—	Signal ground
8	CD	<—	Carrier detect (used for modem control)
20	DTR	—>	Data terminal ready (used for modem control only)
22	RI	<—	Ring indicator

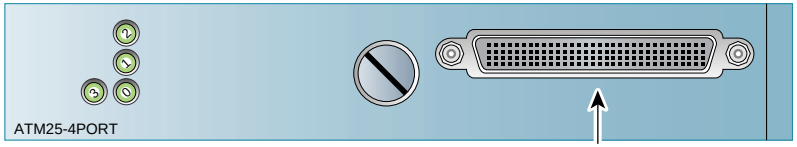
Console Port (DB-25) Pinouts

Pin	Signal	Direction	Description
1	GND	—	Ground
2	TXD	<—	Transmit data
3	RXD	—>	Receive data
4	RTS	<—	Ready to send[1]
5	CTS	—>	Clear to send[1]
6	DSR	—>	Data set ready (always on)[2]
7	GND	—	Ground
8	DCD	—>	Data carrier detect (always on)[2]
20	DTR	<—	Data terminal ready
Shield	GND	—	Shield ground

1. Pins 4 and 5 are connected
2. Pins 6 and 8 are connected

Port Adapter Modules

4-port 25-Mbps

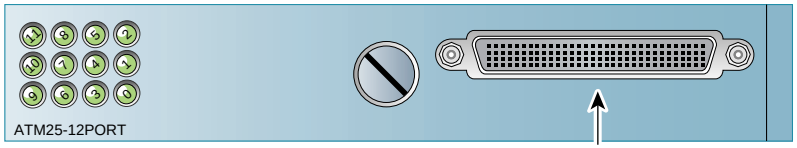


96-pin Molex connector

Available Versions

Product Number	Product Description
C85MS-ATM25-4P	4-port ATM25 Port Adapter Module

12-port 25-Mbps

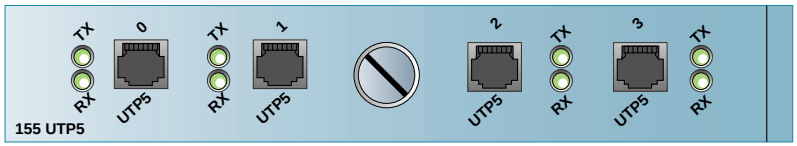


96-pin Molex connector

Available Versions

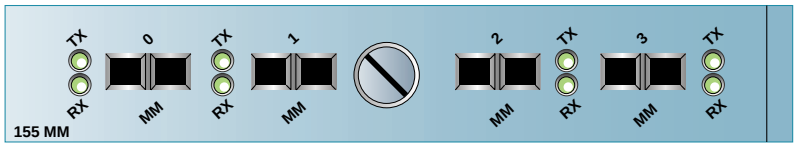
Product Number	Product Description
C85MS-ATM25-12P	12-port ATM25 Port Adapter Module

155-Mbps



Available Versions

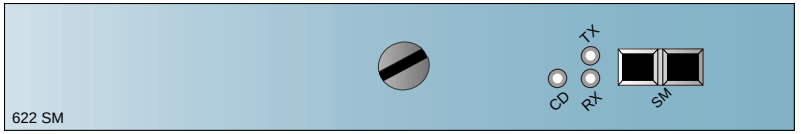
Product Number	Product Description
WAI-OC3-4U5	4-port STS-3c/STM-1 unshielded twisted-pair (UTP-5) Port Adapter Module



Available Versions

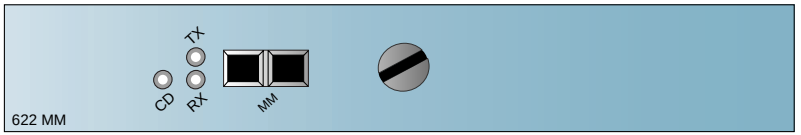
Product Number	Product Description
WAI-OC3-4MM	4-port STS-3c/STM-1 multi-mode fiber (MMF) Port Adapter Module
WAI-OC3-4SS	4-port STS-3c/STM-1 single-mode fiber (SMF) Port Adapter Module
WAI-OC3-1S3M	OC-3 mix Port Adapter Module, 1-port single-mode (SM) intermediate-reach (IR) and 3-port multi-mode (MM) ports
WAI-OC3-4SSLR	4-port STS-3c/STM-1 single-mode (SM) long-reach (LR) Port Adapter Module

622-Mbps



Available Versions

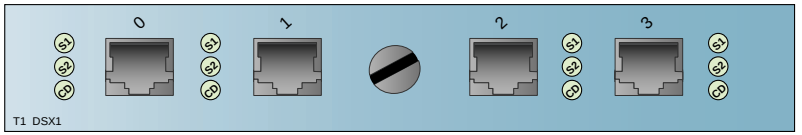
Product Number	Product Description
WAI-OC12-1SS	1-port STS-12c/STM-4c single-mode (SM) Port Adapter Module



Available Versions

Product Number	Product Description
WAI-OC12-1MM	1-port STS-12c/STM-4c multi-mode fiber (MMF) Port Adapter Module
WAI-OC12-1SSLR	1-port STS-12c/STM-4c single-mode (SM) long-reach (LR) Port Adapter Module

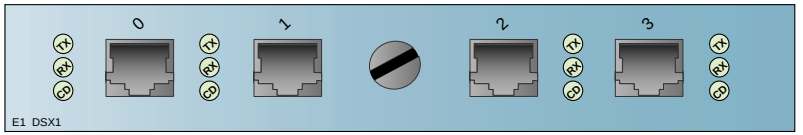
T1



Available Versions

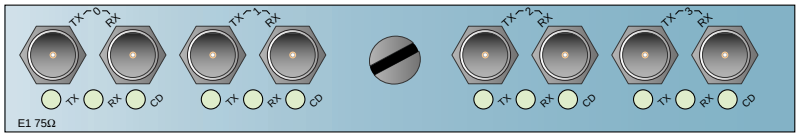
Product Number	Product Description
WAI-T1-4RJ48	4-port T1 (ATM) with RJ-48 interface Port Adapter Module

E1



Available Versions

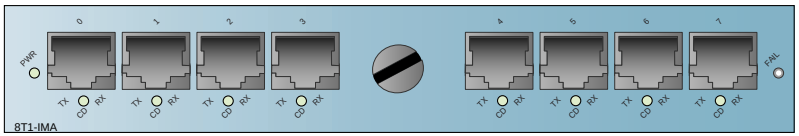
Product Number	Product Description
WAI-E1-RJ48	4-port E1 (ATM) with RJ-48 interface Port Adapter Module



Available Versions

Product Number	Product Description
WAI-E1-4BNC	4-port E1 (ATM) with BNC interface Port Adapter Module

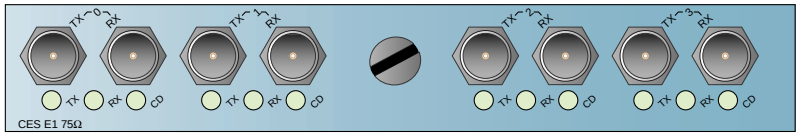
8-port T1 and E1 IMA



Available Versions

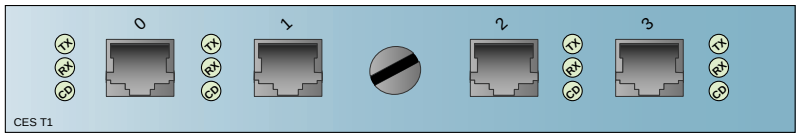
Product Number	Product Description
C85MS-8T1-IMA	C8500MSR/LS1010 8-port T1 IMA Port Adapter Module
C85MS-8E1-IMA-120	C8500MSR/LS1010 8-port E1 120-ohm IMA Port Adapter Module

4-port CES E1 and T1



Available Versions

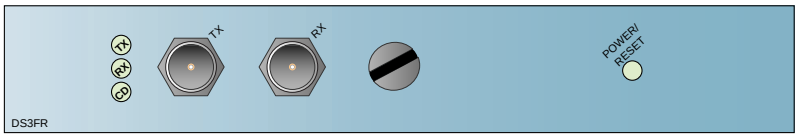
Product Number	Product Description
WAI-E1C-4BNC	4-port E1 (circuit emulation) with BNC interface Port Adapter Module



Available Versions

Product Number	Product Description
WAI-E1C-4RJ48	4-port E1 (circuit emulation) with RJ-48 interface Port Adapter Module
WAI-T1C-4RJ48	4-port T1 (circuit emulation) with RJ-48 interface Port Adapter Module

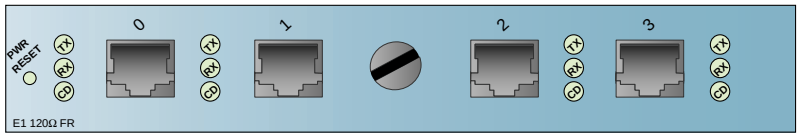
CDS3 Frame Relay Port Adapter



Available Versions

Product Number	Product Description
C85MS-1DS3-FRBNC	C8540 1-port Channelized DS3 Frame Relay Port Adapter Module

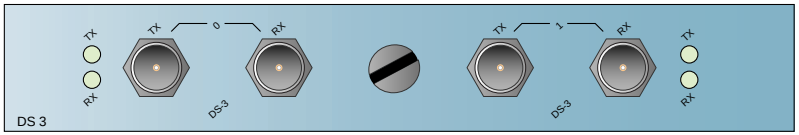
CE1 Frame Relay



Available Versions

Product Number	Product Description
C85MS-4E1-4BNC	C8540 4-port Channelized E1 Frame Relay Port Adapter Module

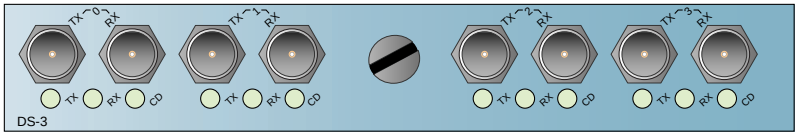
2-port DS3



Available Versions

Product Number	Product Description
WAI-T3-2BNC	2-port DS3 Port Adapter Module
WAI-E3-2BNC	2-port E3 Port Adapter Module

4-port DS3



Available Versions

Product Number	Product Description
WAI-T3-4BNC	4-port DS3 Port Adapter Module
WAI-E3-4BNC	4-port E3 Port Adapter Module

Interface Modules

ATM Router Module

Available Versions Product Number	Product Description
C8510-ARM-64K	C8510 ATM Router Module 64K

Gigabit Ethernet

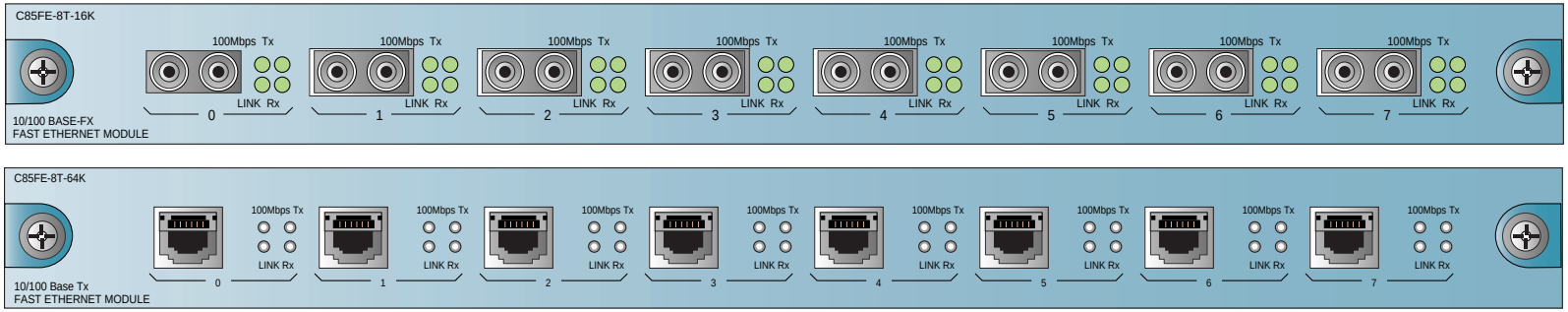
1-port

C85GE-1X-16K	C8510 1-port Gigabit Ethernet 16K
C85GE-1X-64K	C8510 1-port Gigabit Ethernet 64K

Fast Ethernet

8-port

C85FE-16T-16K	C8540 16-port 10/100 UTP 16K
C85FE-16T-64K	C8540 16-port 10/100 UTP 64K
C85FE-16TACL-16K	C8540 16-port 10/100 UTP 16K w/ACL
C85FE-16TACL-64K	C8540 16-port 10/100 UTP 64K w/ACL
C85FE-16F-16K	C8540 16-port 100-FX MT-RJ 16K
C85FE-16F-64K	C8540 16-port 100-FX MT-RJ 64K
C85FE-16FACL-16K	C8540 16-port 100-FX MT-RJ 16K w/ACL
C85FE-16FACL-64K	C8540 16-port 100-FX MT-RJ 64K w/ACL



Distance and Pinout Information

Maximum Transmission Distances

Transceiver Speed	Cable Type	Max. Distance Between Stations
10/100-Mbps Ethernet	Category 5 UTP	328 feet (100 m)
100-Mbps Ethernet	Multimode fiber	1640 feet (500 m)
1000-Mbps Ethernet	Multimode fiber	1640 feet (500 m)
1000-Mbps Ethernet	Single-mode fiber	16404 feet (5 km)
25-Mbps ATM	Category 5 UTP	328 feet (100 m)
155-Mbps ATM	Single-mode fiber, long reach	25 miles (40 km)
155-Mbps ATM	Multimode fiber	1.2 miles (2 km)
622-Mbps ATM	Single-mode fiber	9 miles (15 km)
622-Mbps ATM	Single-mode fiber, long reach	25 miles (40 km)[1]
622-Mbps ATM	Multimode fiber	1640 feet (500 m)
T1, 1.544-Mbps ATM	Category 5 twisted-pair	650 feet (198 m)
E1, 2.048-Mbps ATM	Category 5 twisted-pair and FTP (120 ohm)	650 feet (198 m)
E1, 2.048-Mbps ATM	Coaxial cable (75 ohm)	650 feet (198 m)
CDS3, 45-Mbps	Coaxial cable	450 feet (137 m)
CE1, 2.048-Mbps ATM	Category 5 twisted-pair	650 feet (198 m)
CES T1	Category 5 twisted-pair and FTP	650 feet (198 m)
CES E1	Category 5 twisted-pair and FTP (120 ohm)	820 feet (250 m)
CES E1	Coaxial cable (75 ohm)	650 feet (198 m)
DS3, 45-Mbps	Coaxial cable	450 feet (137 m)
E3, 34-Mbps	Coaxial cable	1299 feet (396 m)

1. If you are attaching a short cable to the 622-Mbps long-reach port adapter, you must add 10 dB of attenuation to the cable or the transmitter might overdrive the receiver and introduce data errors.

Pinouts to RJ-45 Connectors

The 10/100 Mbps Ethernet interface module with unshielded twisted-pair (UTP) ports supports RJ-45 connectors. The following table lists the signals for RJ-45 cable connectors.

Pin	Signal	Description
1	RxD+	Receive data +
2	RxD–	Receive data –
3	NC	No connection
4	NC	No connection
5	NC	No connection
6	NC	No connection
7	TxD+	Transmit data +
8	TxD–	Transmit data –

Pinouts to RJ-48c Connectors

The T1, E1, CES T1, and CES E1 port adapters support RJ-48c connectors. The following table lists the signals for RJ-48c connectors.

Pin	Description
1	Receive ring
2	Receive tip
3	No connection
4	Transmit ring
5	Transmit tip
6	No connection
7	No connection
8	No connection

Pinout Information

96-Pin Molex to 12 Unshielded RJ-45 Connectors

The 25-Mbps port adapter supports a 96-pin Molex to 4 unshielded RJ-45 connectors. The following table lists the signals for the 96-pin Molex connector.

Signal	Molex Pin No.	RJ-45 Port No.	RJ-45 Pin No.	Description
RXA3	1	3	1	Receive data +
RXB3	2	3	2	Receive data –
GND	3	NC	NC	No connection
GND	4	NC	NC	No connection
TXA3	5	3	7	Transmit data +
TXB3	6	3	8	Transmit data –
GND	7	NC	NC	No connection
GND	8	NC	NC	No connection
RXA7	9	7	1	Receive data +
RXB7	10	7	2	Receive data –
GND	11	NC	NC	No connection
GND	12	NC	NC	No connection
TXA7	13	7	7	Transmit data +
TXB7	14	7	8	Transmit data –
GND	15	NC	NC	No connection
GND	16	NC	NC	No connection
RXA11	17	11	1	Receive data +
RXB11	18	11	2	Receive data –
GND	19	NC	NC	No connection
GND	20	NC	NC	No connection
TXA11	21	11	7	Transmit data +
TXB11	22	11	8	Transmit data –
GND	23	NC	NC	No connection
GND	24	NC	NC	No connection
RXA10	25	10	1	Receive data +
RXB10	26	10	2	Receive data –
GND	27	NC	NC	No connection
GND	28	NC	NC	No connection
TXA10	29	10	7	Transmit data +
TXB10	30	10	8	Transmit data –
GND	31	NC	NC	No connection
GND	32	NC	NC	No connection
RXA6	33	6	1	Receive data +
RXB6	34	6	2	Receive data –
GND	35	NC	NC	No connection
GND	36	NC	NC	No connection
TXA6	37	6	7	Transmit data +
TXB6	38	6	8	Transmit data –
GND	39	NC	NC	No connection
GND	40	NC	NC	No connection
TXB2	41	2	8	Transmit data –
TXA2	42	2	7	Transmit data +
GND	43	NC	NC	No connection
GND	44	NC	NC	No connection
RXB2	45	2	2	Receive data –
RXA2	46	2	1	Receive data +
GND	47	NC	NC	No connection
RXA6	48	NC	NC	No connection
RXA1	49	1	1	Receive data +
RXB1	50	1	2	Receive data –
GND	51	NC	NC	No connection
GND	52	NC	NC	No connection
TXA1	53	1	7	Transmit data +
TXB1	54	1	8	Transmit data –
GND	55	NC	NC	No connection
GND	56	NC	NC	No connection
RXA4	57	4	1	Receive data +
RXB4	58	4	2	Receive data –
GND	59	NC	NC	No connection
GND	60	NC	NC	No connection
TXA4	61	4	7	Transmit data +
TXB4	62	4	8	Transmit data –

Signal	Molex Pin No.	RJ-45 Port No.	RJ-45 Pin No.	Description
GND	63	NC	NC	No connection
GND	64	NC	NC	No connection
RXA9	65	9	1	Receive data +
RXB9	66	9	2	Receive data –
GND	67	NC	NC	No connection
GND	68	NC	NC	No connection
TXA9	69	9	7	Transmit data +
TXB9	70	9	8	Transmit data –
GND	71	NC	NC	No connection
GND	72	NC	NC	No connection
RXA8	73	8	1	Receive data +
RXB8	74	8	2	Receive data –
GND	75	NC	NC	No connection
GND	76	NC	NC	No connection
TXA8	77	8	7	Transmit data +
TXB8	78	8	8	Transmit data –
GND	79	NC	NC	No connection
GND	80	NC	NC	No connection
TXB5	81	5	8	Transmit data –
TXA5	82	5	7	Transmit data +
GND	83	NC	NC	No connection
GND	84	NC	NC	No connection
RXB5	85	5	2	Receive data –
RXA5	86	5	1	Receive data +
GND	87	NC	NC	No connection
GND	88	NC	NC	No connection
TXB0	89	0	8	Transmit data –
TXA0	90	0	7	Transmit data +
GND	91	NC	NC	No connection
GND	92	NC	NC	No connection
RXB0	93	0	2	Receive data –
RXA0	94	0	1	Receive data +
GND	95	NC	NC	No connection
GND	96	NC	NC	No connection

MT-RJ Ethernet Cable Connectors

The Ethernet ports on the 100BASE-FX interface module are MT-RJ receptacles. The following table lists the signals for the MT-RJ Ethernet cable connector.

Pin	Signal	Direction	Description
1	VeeRX	—	Receiver signal ground
2	VccRX	<—	Receive power supply
3	SD	—	Signal Detect
4	RD-	<—	Receiver data-
5	RD+	<—	Receiver data+
6	VccTX	—>	Transmit power supply
7	VeeTX	—>	Transmit signal ground
8	Tdis	—	Transmit disable
9	TD+	—>	Transmit data+
10	TD-	—>	Transmit data-

Specifications and Regulatory Compliance Information

Description	Specifications
Switch and processor capacity	10-Gbps shared memory, nonblocking switch fabric up to 32-KB frames
Dimensions (H x W x D)	Chassis: 10.4 x 17.25 x 18.4 in (26.4 x 43.8 x 46.7 cm) Processor, switch processor, carrier module, and interface module: 1.2 x 14.4 x 16 in (3.0 x 36.6 x 40.6 cm) Port adapter: 1.2 x 6.5 x 10 in (3.0 x 16.5 x 25.4 cm) Power supply: 2.7 x 6.0 x 15.3 in (6.9 x 15.2 x 38.9 cm)
Weight	Empty chassis: 32 lb (14.51 kg) Fully populated chassis: approximately 130 lb (58.97 kg) AC power supply: 11 lb (4.99 kg) DC power supply: 10 lb (4.54 kg)
Airflow	95 cfm through the system fan assembly
Operating temperature	32 to 122°F (0 to 50°C)
Nonoperating temperature	–40 to 167°F (–40 to 75°C)
Humidity	10 to 90%, noncondensing
Altitude	–500 to 6,500 ft (–152 to 2000 m)
Microprocessor	100-Mhz MIPS R4700
AC total output	388W maximum
AC-input voltage	100-127/200-240 VAC wide input with power factor correction
AC frequency	Auto sensing limits: 100 to 127/200 to 240 VAC, 8/4A, 50/60 Hz
AC current rating	8/4A with the chassis fully populated
Power supply load	376W maximum configuration, 200W typical with max configuration
DC voltages supplied and steady-state maximum current ratings	System: +5V @ 70A +12V @ 2A +24V @ 0.12A Processor: +5V @ 15A +24V @ 25mA +12V @ 500mA

Description	Specifications
Memory	8-MB Flash memory SIMM (upgradable to 16 MB) 64-MB DRAM 256-KB boot EPROM 128-KB SRAM No Flash PC card installed by default (accepts 8-, 16-, or 20-MB Intel Series 2+ Flash PC cards)
Regulatory Compliance	CE Marking (European Union)[1] UL 1950 (U.S.A.) CSA C22.2 No. 950 (Canada) EN60950 (European Union) IEC60950 (International) AS/NZS 3260 (Australia/New Zealand) TS001 (Australia) 21CFR1040 (Laser - U.S.A.) EN60825 (Laser - European Union) IEC60825 (Laser - International) FCC Part 15 (CFR 47) Class A (U.S.A.) VCCI Class A with UTP and Class B with FTP cables (Japan) EN55022 Class A with UTP and Class B with FTP cables (European Union) CISPR 22 Class A with UTP and Class B with FTP cables (International) AS/NZS 3548 Class A with UTP and Class B with FTP cables (Australia/New Zealand) EH 55024 EH 50082-1 ET5300 386-2 ICES 003 Class A

1. Products bear CE Marking indicating compliance with the 99/5/EC directive, which includes the following safety and EMC standards.

Product Documentation

Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters
Cisco Systems Europe
11, Rue Camille Desmoulins
92782 Issy-les-Moulineaux
Cedex 9
France
www-europe.cisco.com
Tel: 33 1 58 04 60 00
Fax: 33 1 58 04 61 00

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems Australia, Pty., Ltd
Level 9, 80 Pacific Highway
P.O. Box 469
North Sydney
NSW 2060 Australia
www.cisco.com
Tel: +61 2 8448 7100
Fax: +61 2 9957 4350

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the

Cisco Web site at www.cisco.com/go/offices

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia
Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia
Ireland • Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru
Philippines • Poland • Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa
Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

DOC-7810519=
78-10519-03

Catalyst 8510 CSR Documentation
http://www.cisco.com/univercd/cc/td/doc/product/l3sw/8510/index.htm

Catalyst 8510 MSR Documentation
http://www.cisco.com/univercd/cc/td/doc/product/atm/c8510/index.htm

LightStream 1010 Documentation
http://www.cisco.com/univercd/cc/td/doc/product/atm/ls1010s/index.htm

Related Web Pages

Catalyst 8500 Series
http://www.cisco.com/warp/public/cc/pd/si/casi/ca8500/index.shtml

LightStream 1010 ATM Switches
http://www.cisco.com/warp/public/cc/pd/si/lsatsi/ls1010

Layer 3 Backbone
http://www.cisco.com/warp/public/779/largeent/design/L3_backbone.html

Catalyst 8510 CSR Software
(requires CCO authorization)
http://www.cisco.com/cgi-bin/tablebuild.pl/cat8510c

Catalyst 8510 MSR Software
(requires CCO authorization)
http://www.cisco.com/cgi-bin/tablebuild.pl/cat8510m

LightStream 1010 Software
(requires CCO authorization)
http://http://www.cisco.com/cgi-bin/tablebuild.pl/ls1010

Cisco Interactive Quick Start Guides
http://www.cisco.com/mm/quickstart/